

## EDITORIAL

# Transforming the Milieu of Cancer

转变癌症环境

## Transformar el entorno del cáncer

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The inclusion of whole-person evaluation in cancer management has its origins in a renewed appreciation of the role of the biological terrain in the development of malignancy. The macrocosm of cancer care is eloquently reflected in the microcosm of the tumor. Behavioral states transform our physiological and biochemical landscape into one that either facilitates or retards malignancy. Herein lie both the opportunity and the responsibility for healthcare providers and patients.

The understanding and acceptance of the impact that diet and lifestyle factors have on the incidence and progression of cancer are finally making their way into cancer care. Bolstered by reports that more than 50% of cancer diagnoses could be prevented with the implementation of health-promoting lifestyle changes known to decrease cancer risk,<sup>1</sup> the importance of these life-saving influences cannot be overstated.

### THE BIOLOGY OF CANCER

With the introduction of the concept of the tumor microenvironment in the 1980s, a new understanding of tumor biology emerged. The concept of cancer as an “unhealed wound” emphatically declared a role for inflammation in the development and progression of cancer. In a sinister twist of fate, the normally self-preserving influx of inflammatory immune cells to the site of a growing cluster of transformed cells becomes a co-opted process of tumor facilitation. Mast cells secrete histamine, which drives tumor cell proliferation while suppressing cytotoxic immune cell activity. Moreover, tumor-associated mast cells, macrophages, and dendritic cells experience changes in their cytokine profiles, resulting in neoangiogenesis.<sup>2</sup> In an odd aberration of activity, type 1 cytotoxic T cells make their way to the site of the growing tumor and attack the tumor stroma and not the tumor cells.<sup>3</sup> While seemingly antithetical to survival, this attack is actually a critical step toward tumor eradication as the stroma is the primary source of angiogenic, metastatic, and invasive chemokines. Thus, the terrain assumes a central role in the carcinogenic process.

While chaos reigns outside of the malignant cell cluster, all is not well on the intracellular level either. Mutated cells are aberrant in the fullest sense. Suffering under genetic and epigenetic influences, cell behavior becomes increasingly erratic and uncontrolled. Fueled by oxidative stress, apoptotic signaling shuts down and

cell division accelerates. The exquisitely sensitive act of mitosis becomes barraged by oxidative insult and results in catastrophic chromosomal imbalance. Cells that survive this rearrangement give rise to the aneuploid hallmark of malignancy. Further derangements of molecular biology ensue, including a switch to anaerobic glycolysis, upregulated telomerase, and additional epigenetic changes that all march the cellular clone toward a highly lethal phenotype.

### HUMANS' ROLE IN CANCER

The process of carcinogenesis is complex and clearly a phenomenon of extracellular and intracellular factors that collaborate in an unholy union of destruction. In an eerily logical way, the dynamic of carcinogenesis is both the result of—and exactly reflective of—our chaotic manner of living on this planet. Our species seems grimly set on a path toward its own destruction, with uncontrolled consumption of resources, excessive production of increasingly toxic waste, uncontrolled population growth, and a seemingly complete disregard of boundaries. Viewed from a societal level, uncontrolled growth is co-opting resources and choking out planetary assets. Viewed from a spiritual perspective, the human race has reached a point of collective insanity. The manic hedonistic drive that has infiltrated human endeavor, with its apparent disregard of the impact on fellow beings, our planet, and our future, is in no way rational. Viewed from an individual perspective, many people have no idea what health feels like. Too many lives are experienced through the haze of cigarette smoke, under the burden of excess weight, blurred by sleep deprivation, distracted by unrelenting stress, housed within a devitalized sedentary shell. On many levels, we are profoundly unwell. Is it surprising then that the incidence of all cancer diagnoses is on a trajectory to increase from 12.7 million new cases in 2008 to 22.2 million by 2030,<sup>4</sup> soon to surpass heart disease to become the number-one killer?

At no time has the confluence of these causative factors been greater. The need for a transformative approach to the cancerous malady that curses our human community is acute. Nothing short of complete renovation in cancer management will suffice. A holistic approach to cancer is driven by the fundamental belief in the innate healing capacity of the individual, and collectively, of society. This new methodology

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#### Key Words

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seeks to remove obstacles to cure, restore the mechanisms of self-repair, and reinstate patterns of activity that are consistent with homeostatic balance. It is built on a foundation of unconditional trust in the wisdom of the body, the spirit, and the person.

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### THE NEED FOR TRANSFORMATION

A transformative approach to cancer utilizes the understanding of the interdependencies found in our physiology. Transformation of the internal landscape requires a systemic assessment of the most determinant pathways in the restoration of a healthy body. This is where the holistic practitioner is integral to the healing process.

An integrative approach to cancer prevention and treatment relies upon a comprehensive evaluation of the individual and of the key areas of influence on that individual's health. Assessment of the degree, source, and manifestations of inflammation is integral to remapping the tissue environment so that it does not become a tumor environment. Evaluation of the metabolic profile of the individual to better understand the influence of insulin as a growth factor is of critical importance. Consideration of the degree and nature of stress and other hormonal disruptors, including environmental toxicants, is an essential component of understanding the carcinogenic predilection. Enhancement of the functional state of immunity is paramount as this is the primary defense against tumorigenesis. Finally, an assessment of digestive, absorptive, and detoxification capabilities is critical to altering the toxic determinants of disease. When holistic practitioners incorporate these elements into their understanding of the individual, their ability to establish health will be informed and comprehensive.

At the same time, the increasingly sophisticated delivery of targeted molecular weapons deep within the cell offers the companion therapy to modifying the milieu. The pandemonium of a mutated cell, while chaotic, is orderly enough to be perpetual. Delivering precisely engineered smart bombs to key pathways of this disorderly conduct offers the opportunity to sever the path of malignancy. Molecular miracles in the form of drugs such as imatinib (Gleevec, Novartis, Basel, Switzerland) and trastuzumab injection (Herceptin, Genentech, South San Francisco, California) have changed the landscape of cancer prognosis. Continued development of these synthetic molecules, aided, perhaps, by some of nature's targeted molecules, is essential to cancer control. The plentiful polyphenolics found in botanicals are a virtual armamentarium of untapped anticancer compounds. Peppering the cancerous cell with toxic molecular missiles while

unhitching the tissue environment from the cell's growth offers the ultimate potential for cancer control.

It is this comprehensive platform of cancer prevention, management, and recovery that people seek. Cancer is a cruel teacher but a teacher nonetheless. One of its foundational lessons is the sanctity of wellness. People diagnosed with this disease, as well as their loved ones, are faced with a chasm of despair. Those who move away from this abyss do so with a fierce commitment to re-establish health. Practitioners who meet this desire with a sophisticated, comprehensive, and patient-centered plan will help redefine cancer and patient empowerment. Each proactive patient will serve as a spark for the societal transformation necessary for our collective survival. In this sense, the disease we call cancer is an opportunity—an opportunity to heal the deepest wounds of humanity.

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